



SRM

UNIVERSITY AP

Andhra Pradesh

Department of Physics

SRM University – AP, Andhra Pradesh



About

Physics is the most fundamental science that deals with the properties and interactions of matter and radiation. Understanding the world around us, including the modern technological advancements, is based on centuries of developments in physics. As such, physics provides the basis for all applied sciences and technologies.

Currently the Department of Physics at SRM University-AP, Andhra Pradesh offers the *Bachelor of Science Honours (B.Sc. Physics (H))* and *Ph.D. graduate program in physics*. The B.Sc. Physics (H) program gives the students a solid foundation in skills like problem-solving, observation skills, numerical aptitude, practical thinking, and reasoning ability. The B.Sc.(H) in Physics with minor in another program can lead to a variety of careers, which the students can choose after the completion of the program. The department also encourages research opportunities for undergraduate students, as well as graduate students, in several areas of experimental and computational/theoretical physics.

The department faculty members are engaged in cutting edge research problems. In last two years faculty members published **81 research articles** with average impact factor of **5.05**. Three patents have been published and **10** govt. funded projects (DST, SERB, BRNS, UGC-DAE, NSM) are on-going with total outlay of **>4.13 Crores**.

Vision:

The Department of Physics aims to provide stimulating, elevating, and problem-oriented programs of study in basic and applied physics. All the courses are designed in accord with scientific and industrial research, taught by faculty members in the relevant fields of research.

Mission:

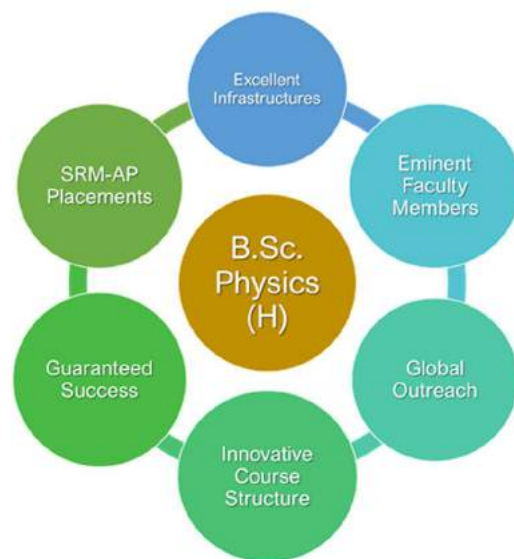
The mission of Physics department is to teach and learn physics in through interactive, collaborative, performance, and *project-based pathway*. Physics majors and minors have effective curriculum, with depth of study for students to pursue physics and engineering at the undergraduate level. The students can embark on a career in technology or science education both in industry and higher education.

B.Sc. Physics (Hons.):

B.Sc. PHY (Hons) Three years Program with **140** Credits

Key Features of the program:

B.Sc. Physics (Hons) curriculum is designed considering the fundamental aspect of Physics and application-oriented for skill development. The laboratory classes of total 26 credits are designed to provide as much as hands-on experience in the area of applied Physics. The project course of 5 credits and industrial visits will provide exposure to the students in the desired advanced scientific and technological area. Courses such as **Quantum Mechanics, Solid State Physics, High Energy Physics and Statistical Mechanics** will help to a strong base in Physics, whereas the course such as “**Free space and fiber optical communication**” and “**Introduction to Quantum Computation Training in LabView Software**” will help students to choose career path in communication, device industry and higher study in world class universities.



Key Benefits that one can get after joining the program:

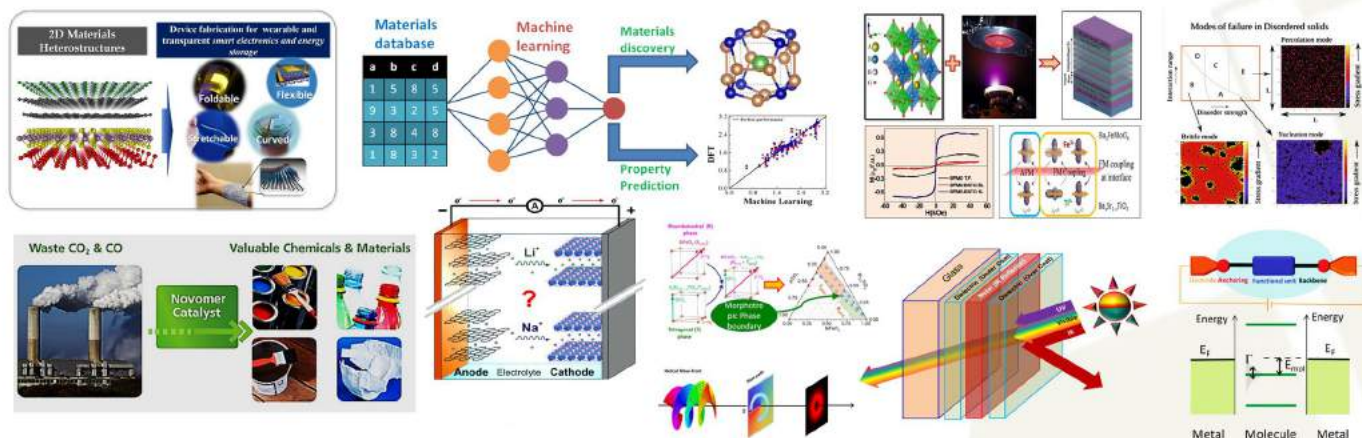
- The Department's national and international collaboration is strong. The student will get exposure through faculty members.
- The faculty members are expert in training students and has a commendable track record in teaching and research.
- Learning Environment and easy accessibility of faculty members to discuss doubts and career path.
- Those who love the theoretical aspects of physics can choose to do higher studies and take up research opportunities.
- If someone is interested in public sector, lots of public sector units such as BHEL, DRDO, ISRO, BARC and many more will be interested in recruiting the Engineering Physics graduates.
- The interest in Optical communication can lead you to a respectful job in field of Telecommunications.

Academic and Research Labs:

The academic and research laboratories are equipped with advanced instruments with *updated research and industrial relevance*.



Research Area:



Scope and Opportunities:

- Wide choices of Minor/elective subjects
- Problem based curricula to help in clearing National level exams (e.g. NET, GATE, JEST)
- Higher studies in reputed institutes (National and international)
- University placements
- Can take part in research projects in cutting edge areas of research.
- Internship (National and International institutes)

Achievements of B.Sc. Students...

Mr. Bennet Benny, pursuing B.Sc. Physics in the Department of Physics, SRM University-AP, Amaravati, Mentor: **Prof. Ranjit Thapa**, got selected for the **SAKURA2019 internship program**, **Japan** Advanced Institute of Science and Technology, Asahidai 1-1, Nomi Ishikawa 923-1292, Japan. A summer short internship providing hand-on tutorials of electronic structure calculations (*Host: Prof. Ryo Maezono*) was held on **16th-24th Dec 2019**. It was supported by a Japanese government funding agency.

Watch it here what Mr. Bennet says about his experience

<https://www.youtube.com/watch?v=XiohK-FnigQ&t=3s>



Selected Research Publications...

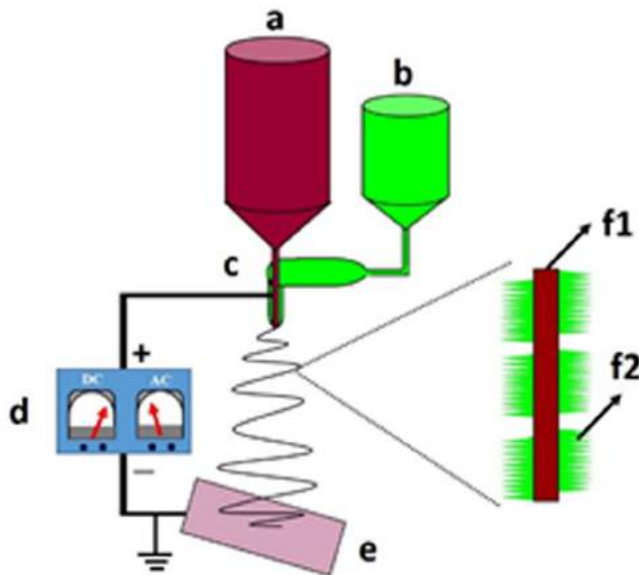
- Energy parameter and electronic descriptor for carbon-based catalyst predicted using QM/ML, S Kapse, S Janwari, UV Waghmare, **R Thapa**, *Applied Catalysis B: Environmental* 286, 119866 (2021) [I.F: 16.683]
- Tailoring magnetic order via atomically stacking 3d/5d electrons to achieve high-performance spintronic devices, K Huang, L Wu, M Wang, N Swain, **M Motapothula**, Y Luo, K Han, M Chen, *Applied Physics Reviews* 7 (1), 011401 (2020) [I.F: 17.05]
- Direct Growth of Wafer-Scale, Transparent, p-Type Reduced-Graphene-Oxide-like Thin Films by Pulsed Laser Deposition, Juvaidd, M. M., Sarkar, S., Gogoi, P. K., **Ghosh, S.**, Annamalai, M., Lin, Y. C., ... & Jani, H., *ACS nano* 14 (3), 3290-3298 [I.F: 14.588]
- Thickness-insensitive properties of α -MoO₃ nanosheets by weak interlayer coupling, J.H. Kim, C.Hyun, H.Kim, **J. K. Dash**, K.Lhm and G.-H Lee, *Nano Letters*, 19 (12), 8868-8876 (2019) [I.F: 11.238]
- Solution Processed Pure Sulfide CZCTS Solar Cells with Efficiency 10.8% using Ultra-thin CuO Intermediate Layer, Siarhei Zhuk, Terence Kin Shun Wong, Miloš Petrović, Emmanuel Kymakis, Shreyash Sudhakar Hadke, Stener Lie, Lydia Helena Wong, Prashant Sonar, Avishek Dey, Satheesh Krishnamurthy, **Goutam Kumar Dalapati**, *Solar RRL*, 4, 2000293, (2020) [IF: 7.527]
- Avalanche dynamics in hierarchical fiber bundle, **Soumyajyoti Biswas**, and Michael Zaiser, *Phys. Rev. E* 100, 022133 (2019) [IF: 2.353]
- Protein bioelectronics: A review of what we do and do not know, C. D Bostick, **Sabyasachi Mukhopadhyay**, Israel Pecht, Mordechai Sheves, David Cahen, David Lederman, *Reports on Progress in Physics*, 026601, 81(2018) [IF: 16.620]
- Scattering of Poincare beams: Polarization speckles, **Salla Gangi Reddy**, Vijay Kumar, Yoko Miyamoto, and R. P. Singh, *Optics Express*, 25, 19886- 19893 (2017) [IF: 3.4]
- Evaluation of band edge parameters, Li ion dynamics and excellent electrochemical properties of Li₄Ti₅O₁₂ anode thin films, *S Subash*, *S Yasui*, *S Yasuhara*, *LN Patro*, *KK Bharathi*, *Electrochimica Acta* 354, 136741 [IF: 6.216]

Selected Patents...

- Title:** "A fiber material with moisture retention capacity with thermal tolerance and a method for manufacture"

Inventors: Sabyasachi Mukhopadhyay and Sreelekha B (B. Sc. 3rd year student)

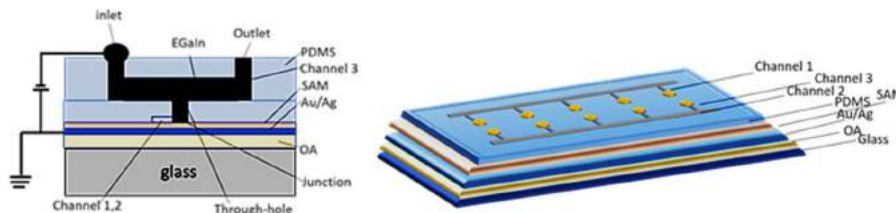
Application No.: 202141023375.



- a) Sheath solution (Polymer)
- b) Core solution (Clay)
- c) Electrospinning setup
- d) AC + DC power supply
- e) Collection Substrate
- f) Final pattern
 1. Core Material (Clay)
 2. Outside coating material (Polymer)

- Title:** " Poly dimethyl Siloxane (PDMS) Microchannel based Nanoscale devices that effectively measure electron transport at single layer of molecules and Method for manufacture of the same, "

Inventors: Ashwini Nawade and Sabyasachi Mukhopadhyay



Faculty Members:



Prof D Narayana Rao

*Professor
Pro Vice Chancellor*



Dr Gangi Reddy Salla

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Ph.D.: Physical Research
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Prof. Ranjit Thapa

*Professor and Head
Ph.D.: Jadavpur University, India*



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